

Appendix G

Material Safety Data Sheet for 2,4 D (DMA 4 IVM Herbicide)

This appendix is a Material Safety Data Sheet (MSDS) for one of the formulations of 2,4-D manufactured by Dow AgroSciences LLC. The information in this MSDS is typical of what can be found on any herbicide MSDS and is required of the manufacturer by numerous federal, state, and local laws and regulations. It contains information that will assist in the safe handling and storage of the herbicide.

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

Effective Date: 2/8/01
Product Code: 84631
MSDS: 000246

DMA* 4 IVM HERBICIDE

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: DMA* 4 IVM Herbicide

COMPANY IDENTIFICATION:

Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

2,4-D Dimethylamine Salt:	CAS# 002008-39-1	46.3%
2,4-Dichlorophenoxyacetic Acid, Dimethylamine Salt		
Other Ingredients, Total, Including Dimethylamine	CAS# 000124-40-3	53.7%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Hazardous chemical. Brown liquid with an amine odor. May cause severe eye irritation with corneal injury. The LD₅₀ for skin absorption in rabbits is >1000 mg/kg. The oral LD₅₀ for rats is ~1000 mg/kg.

EMERGENCY PHONE NUMBER: 800-992-5994

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause severe irritation with corneal injury, which may result in permanent impairment of vision, even blindness.

SKIN: Essentially non-irritating to skin. A single prolonged exposure may result in the material being absorbed in harmful amounts. The LD₅₀ for skin absorption in rabbits is >1000 mg/kg.

INGESTION: Single dose oral toxicity is low. The oral LD₅₀ for rats is ~1000 mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

*Trademark of Dow AgroSciences

INHALATION: Single exposure to vapors is not likely to be hazardous.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:

Excessive exposure may cause liver, kidney, and gastrointestinal and muscular effects. Signs and symptoms of excessive exposure may be nausea, vomiting, abdominal cramps, or diarrhea.

CANCER INFORMATION: 2,4-Dichlorophenoxyacetic acid did not cause cancer in laboratory animal studies.

TERATOLOGY (BIRTH DEFECTS): Birth defects are unlikely. Exposures having no effect on the mother should have no effect on the fetus. Did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother.

REPRODUCTIVE EFFECTS: Excessive dietary levels of 2,4-D acid have caused decreased weight and survival in offspring in a rat reproduction study.

4. FIRST AID:

EYES: Immediate and continuous irrigation with flowing water for at least 30 minutes is imperative. Prompt medical consultation is essential.

SKIN: Immediately flush skin with plenty of water while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Destroy and dispose of contaminated leather items (i.e. shoes, belts, or watchbands).

INGESTION: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

Effective Date: 2/8/01
Product Code: 84631
MSDS: 000246

DMA* 4 IVM HERBICIDE

5. FIRE FIGHTING MEASURES:

FLASH POINT: 190°F (88°C)

METHOD USED: TCC

FLAMMABLE LIMITS

LFL: Not determined

UFL: Not determined

EXTINGUISHING MEDIA: Water fog

FIRE & EXPLOSION HAZARDS: Noxious fumes may be produced under fire conditions. Contain water from fire fighting to prevent entry to surface or ground water.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure, self-contained breathing apparatus and full protective equipment.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Absorb small spills in an absorbent material such as sawdust, sand or clay. Dike area of large spills and call Dow AgroSciences at 800-992-5994. Wear protective clothing and self-contained breathing apparatus if vapors are present. Do not use water to clean up.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep out of reach of children. Harmful if swallowed or absorbed through skin. Causes severe eye irritation. Avoid contact with eyes, skin and clothing. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Keep container tightly closed when not in use. Do not store below temperature of 25°F (-4°C). If frozen (crystallized), warm to 65-75°F (19-2°C) and re-dissolve before using by rolling or shaking the container. Store in a safe manner in original container only, in a cool, dry place. Reduce stacking height where local conditions can affect packaging strength. See product label for handling/storage precautions relative to the end use of this product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE:

2,4-D Dimethylamine Salt: None established; ACGIH TLV and OSHA PEL are 10 mg/M³ for the acid.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS:

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guidelines. When respiratory protection is required for certain operations, use a NIOSH approved air-purifying respirator for organic vapors.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, faceshield, or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin areas with soap and water, and launder clothing before reuse. Items, which cannot be decontaminated, such as shoes, belts and watchbands, should be removed, destroyed and disposed of.

EYE/FACE PROTECTION: Use chemical goggles. Eye wash fountain should be located in immediate work area.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

*Trademark of Dow AgroSciences

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

Effective Date: 2/8/01
Product Code: 84631
MSDS: 000246

DMA* 4 IVM HERBICIDE

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: >212°F (100°C)
VAPOR PRESSURE: 8.0 x 10⁻¹⁰ mmHg @ 25°C
VAPOR DENSITY: <1 water vapor
SOLUBILITY IN WATER: Infinite
SPECIFIC GRAVITY: 1.17 approx. @ 68/68°F (20°C)
APPEARANCE: Brown liquid
ODOR: Amine

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Stable under normal storage conditions. Avoid excessive heat.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID)
Acids and oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride and nitrogen oxide under fire conditions.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL):
In-vitro mutagenicity studies were negative. For 2,4-D acid: animal mutagenicity studies were predominantly negative.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING:

No bioconcentration is expected because of the relatively high water solubility.

DEGRADATION AND PERSISTENCE:

Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD >40%).

5-Day biochemical oxygen demand (BOD5) is 0.47 p/p.

10-Day biochemical oxygen demand (BOD10) is 0.50 p/p.

20-Day biochemical oxygen demand (BOD20) is 0.57 p/p.

ECOTOXICOLOGY:

Material is practically non-toxic to aquatic organisms on an acute basis (LC₅₀ is >100 mg/L in most sensitive species). Acute LC₅₀ in fathead minnow (*Pimephales promelas*) is 707 mg/L.

Acute LC₅₀ in pink shrimp (*Penaeus duorarum*) is >1000 mg/L.

Acute LC₅₀ in rainbow trout (*Oncorhynchus mykiss*) is 377 mg/L.

Acute LC₅₀ in bluegill (*Lepomis macrochirus*) is 387 mg/L.

Dietary LC₅₀ in bobwhite (*Colinus virginianus*) is >4640 mg/L.

Dietary LC₅₀ in mallard (*Anas platyrhynchos*) is >4640 mg/L.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: Wastes are toxic. Improper disposal of excess waste, spray mixture, or rinsate is a violation of federal law and may contaminate groundwater. If these wastes cannot be disposed of by use according to label instructions, contact your state pesticide or environmental control agency or the hazardous waste representative at the nearest EPA regional office for guidance.

14. TRANSPORT INFORMATION:

For DOT regulatory information, if required, consult transportation regulations, product-shipping papers, or contact your Dow AgroSciences representative.

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

Effective Date: 2/8/01
Product Code: 84631
MSDS: 000246

DMA* 4 IVM HERBICIDE

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>CONCENTRATION</u>
Dimethylamine	000124-40-3	1%

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard
A fire hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>LIST</u>
Proprietary Ingredient	Proprietary	NJ3 PA1 PA3
Dimethylamine	000124-40-3	NJ1 NJ2 NJ3 PA1 PA3

NJ1=New Jersey Special Health Hazard Substance (present at > or = to 0.1%).

NJ2=New Jersey Environmental Hazardous Substance (present at > or = to 1.0%).

NJ3=New Jersey Workplace Hazardous Substance (present at > or = to 1.0%).

PA1=Pennsylvania Hazardous Substance (present at > or = to 1.0%).

PA3=Pennsylvania Environmental Hazardous Substance (present at > or = to 1.0%).

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

<u>Category</u>	<u>Rating</u>
Health	3
Flammability	2
Reactivity	1

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA, which may require reporting of release.

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>RQ</u>	<u>% IN PRODUCT</u>
Dimethylamine	000124-40-3	1000	1%
Proprietary Ingredient	Proprietary	5000	3%

16. OTHER INFORMATION:

MSDS STATUS: New

Reference: DR-0115-0523

Replaces MSDS Dated: 4/14/99

Document Code: D03-141-001

The Information Herein Is Given In Good Faith, But No Warranty, Express or Implied, Is Made. Consult Dow AgroSciences for Further Information.